USSR

TARANTOVA, A. S., et al., Metallobeveniye    Termicheskaya
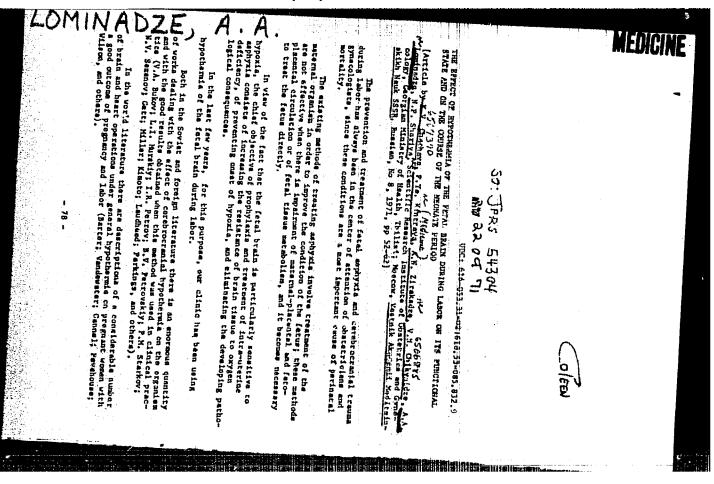Obrabotka Metallov, No 8, 1970, pp 70-74

in laboratory furnaces with reduction through cerium and calcium
were used.  The weight of the melt was 50 kg.  A second table
gives details of the thermal processing applied to the castings
after forging and water-cooling.  In addition to this, the cast-
ings were analyzed chemically and by X-ray analysis.  The results
of the tests for the three melts as well as for standard brands
ON18K9M5T and EI643 are given in a third table.

**MEDICINE**

LOMINADZE, A.A.

SO: JPRS 54304
May 22 04 71

UDC: 618-053.31-07+616.33-085.832.9

THE EFFECT OF HYPOTHERMIA OF THE FETAL BRAIN DURING LABOR ON ITS FUNCTIONAL STATE AND ON THE COURSE OF THE NEONATE PERIOD

[Article by A. A. Lominadze, N.P. Shabashova, P.Ya. Khareva, R.N. Zirakadze, V.N. Chikvaidze, A.A. Lominadze; Georgian Scientific Research Institute of Obstetrics and Gynecology, Ministry of Health, Tbilisi; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 8, 1971, pp 52-62]

The prevention and treatment of fetal asphyxia and cerebrocranial trauma during labor has always been in the center of attention of obstetricians and gynecologists, since these conditions are a most important cause of perinatal mortality.

The existing methods of treating asphyxia involve treatment of the maternal organism in order to improve the condition of the fetus; these methods are not effective when there is impairment of maternal-placental and feto-placental circulation or of fetal tissue metabolism, and it becomes necessary to treat the fetus directly.

In view of the fact that the fetal brain is particularly sensitive to hypoxia, the chief objective of prophylaxis and treatment of intra-uterine asphyxia consists of increasing the resistance of brain tissue to oxygen deficiency, of preventing onset of hypoxia, and eliminating the developing pathological consequences.

In the last few years, for this purpose, our clinic has been using hypothermia of the fetal brain during labor.

Both in the Soviet and foreign literature there is an enormous quantity of works dealing with the effect of cerebrocranial hypothermia on the organism and with the good results obtained when this method was used in clinical practice (V.A. Bukov; L.I. Murskiy; I.R. Petrov; B.V. Petrovskiy; P.M. Starkov; N.V. Sazonov; Gatz; Miller; Kiboto; Laudhued; Parkings, and others).

In the world literature there are descriptions of a considerable number of brain and heart operations under general hypothermia on pregnant women with a good outcome of pregnancy and labor (Barter; Vandewater; Cannal; Pevehouse; Willem, and others).

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USSR

KALADZE, T. D., LOMINADZE, D. G., and STEPANOV, K. N.

"Spectra of Extraordinary Cyclotron Waves in a Metal"

Abstract:  This is a theoretical investigation of the dispersion of extra-
ordinary electronic cyclotron waves in a degenerate Fermi gas of charged
particles -- electrons, in this case -- with an isotropic dispersion law.
Results are given for the numerical solution of the dispersion equation for
these waves in a broad interval of variation of the wave vector.  These
results are plotted in the form of curves for various values of the parameter
$\beta$, equal to the ratio of the electron energy density to the magnetic field
energy density.  Graphs of the frequency of the waves as a function of the wave
vector indicate the frequency to be oscillatory, the result of the unevenness
of the distribution function for a degenerate Fermi gas.  The parameters of
this oscillation are investigated.

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USSR

KALADZE, T. D., LOMINADZE, D. G., and STEPANOV, K. N., Institute of Physics
of the Academy of Sciences Georgian SSR, Tbilisi, and Khar'kov State Univer-
sity imeni A. M. Gor'kiy

"Spectra of Ordinary Cyclotron Waves in Metals"

Abstract: The article gives results of detailed numerical calculations of
the spectra of ordinary cyclotron waves in a degenerate Fermi gas of charge
carriers with the square isotropic dispersion law $\mathcal{E} = p^2/2m$. The first
fifteen natural frequencies are plotted as a function of the ratio of the
Larmor radius to the wavelength for various values of the parameter $\beta \geqslant 10$
( $\beta$ is the ratio of the electron energy density to the magnetic field energy
density).

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USSR

KALADZE, T. D., and LOMINADZE, D. G., Institute of Physics, Academy of
Sciences Georgian SSR, Tbilisi

"Spectra of Potential Ion-Cyclotron Plasma Oscillations"

Abstract:  The article studies the dispersion of potential ion-cyclotron
oscillations in a homogeneous plasma.  By numerical solution of the dis-
persion equation the relationships between the vector wave and the first
fifteen natural cyclotron oscillation frequencies are obtained for various
values of the ion temperature-to-electron temperature ratio.  The authors
thank K. N. STEPANOV for his discussion of the work and his advice.

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USSR

GALEYEV, A. A., LOMINADZE, D. G., PATARAYA, A. D., SAGDEYEV, R. Z., and
STEPANOV, K. N., Institute of High-Temperature Physics of the Academy of
Sciences USSR

"Anomalous Resistance of Plasma Due to Instability at Cyclotron Harmonics"

Abstract: An expression for the anomalous resistance arising due to buildup
of Bernstein modes is obtained and the nonlinear mechanism leading to satura-
tion of the growth of oscillations is explained. It is noted that high
anomalous resistance of plasma observed in many experiments is associated
with the appearance of ion-sound instability; but that ion-sound instability
can arise only for sufficiently strong nonisothermality $T_e \gg T_i$, and the
anomalous resistance occurs when this condition is not fulfilled. It is
observed that instability in electron cyclotron oscillations (Bernstein
modes) has recently been discussed in connection with the problem of anom-
alous resistance; Bernstein modes are oscillations with the wave vector
strictly or almost strictly perpendicular to the magnetic field and with
frequencies of the order $n\omega_{he}$. As distinct from ion-sound, this instability

USSR

GALEYEV, A. A., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, Vol 15, No 7, 5 Apr 72, pp 417-420

develops from $T_i \geq T_e$. An expression is obtained for $\nu_{eff}$, the frequency of
the oscillations at which electrons are scattered. The magnitude of $\nu_{eff}$ is
small due to the "Pitayevskiy factor" $\kappa^2 \rho_e^2$. The resistance given by this
expression is much less than the resistance due to ion-sound instability.
It is stated that when electron-sound instability due to smallness of the
increment of rise cannot develop and goes into a nonlinear mode such as in
collisionless shock waves, this anomalous resistance in Bernstein modes will
play the major role.

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USSR

KALADZE, T. D., LOMINADZE, D. G., and STEPANOV, K. N.

UDC: 533.951

"Investigating Cyclotron Wave Dispersion in a Plasma"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 2, 1972, pp 243-252

Abstract: An analysis is made of the dispersion equations of cy-
clotron waves propagated in a plasma perpendicular to the magnetic
field. Especial attention is devoted to an analysis of the cases
which do not lend themselves to simple analytic operations. Dis-
persion equations are obtained for high-numbered harmonics in the
short-wave limit, and simple analytic expressions are found for
the frequency of cyclotron waves in several limiting cases. A
numerical analysis is made of the dispersion equations which fully
represent the dispersion of plasma cyclotron waves. In the analy-
ses, relativistic effects were ignored. The authors are associated
with the Institute of Applied Mathematics, Tbilisi State University,
Physico-technical Institute of the Ukrainian SSR Academy of Sciences
at Kharkov.

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USSR

UDC 533.916

KALADZE, T. D., LOMINADZE, D. G., and STEPANOV, K. N., Scien-
tific Research Institute of Applied Mathematics of Tbilisi State
University, Institute of Physics of the Academy of Sciences
Georgian SSR, Tbilisi, Physicotechnical Institute of the Acad-
emy of Sciences Ukrainian SSR, Khar'kov

"Study of Plasma Ion-Cyclotron Oscillation Spectra"

Abstract:  The article describes results of the numerical solu-
tion of a dispersion equation for potential and nonpotential
ion-cyclotron oscillations in a low-frequency plasma, as well as
giving analytic solutions in the limiting case of a strongly non-
isothermal plasma.  The dispersion equation of low-pressure
plasma ion-cyclotron oscillations ($4\pi n_0 T_\alpha / H_o^2 \ll 1$    ) takes
the form

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USSR

KALADZE, T. D., et al., Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 3, Mar 71, pp 469-473

$$1 + (T_i/T_e)/(1 - \xi) = f(\omega).$$

where

$$f(\omega) = e^{-\mu} \left| I_0(\mu) + 2 \sum_{n=1}^{\infty} \frac{\omega^2}{\omega^2 - n^2 \omega_{H_i}^2} I_n(\mu) \right|.$$

$$\xi = (T_i/T_e)(\omega^2/\omega_{H_i}^2)\beta/\mu^2.$$

$$\beta = \varkappa/\cos^2\Theta, \quad \varkappa = 4\pi n_0 T_i/H_0^2,$$

$$\mu = k^2 v_{T_i}^2/\omega_{H_i}^2 = k^2 \varrho_i^2,$$

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USSR

KALADZE, T. D.., et al., Ukrainskiy Fizicheskiy Zhurnal, Vol 16,
No 3, Mar 71, pp 469-473

$n_0$ is the plasma density, $H_0$ the external magnetic field
strength, $I_n(\mu)$ modified Bessel function, $\omega'_{Hi} = \frac{e H_c}{m_i c}$
the ion cyclotron frequency, $v_{Ti} = (T_i/m_i)^{1/2}$ the ion thermal
velocity, $\Theta$ the angle between the magnetic field and wave vec-
tor, $\varphi_i = v_{Ti}/\omega_{Hi}$ Larmor ion radius. A BESM-4 computer was
used for the numerical solution of the dispersion equation for
different values of the parameters $\alpha = T_i/T_c$ and $\beta = 4\pi n_0 T_i / H_0^2 \cos^2\Theta$. Graphs for the natural frequencies $\omega =$

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USSR

KALADZE, T. D., et al., Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 3, Mar 71, pp 469-473

$\omega_n(k)$ for parameter $\beta$ values equal to 0, 0.1, 0.3, 1, 3, and 10 indicate that the maximum value of the natural oscillation frequency $\omega_n(k)(\omega_n < n\omega_{Hi})$ increasingly approximates the frequency $n\omega_{Hi}$ with a decrease in the ratio $T_i/T_e$ .

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USSR

UDC 51:330.115

LOMINADZE, N. M., KHUTSISHVILI, R. L., CHITAVA, Z. D.

"Experimental Study of the Solution of the Problem of Selecting Shipping Ports for Marine Transport"

Tr. XV Nauchno-Tekhn. Konf. Prof.-Prep. Sostava I Nauchn. Rabot Po. Probl. I Otrasl. Labor. Gruz. Politekhn. In-t Vyp. 17, [Works of the 15th Scientific-Technical Conference of Teachers and Scientific Workers of the Problem and Branch Laboratory of Georgian Polytechnical Institute, No. 17], Tbilisi, 1970, pp 69-76, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V591).

No Abstract.

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USSR

DEMIDENKO, I. I.; LOMINO, N. S.; PADALKA, V. G.

"Plasma Current in a Strong Transverse Magnetic Field"

Leningrad, Zhurnal Tekhnicheskoy Fiziki; July, 1971; pp 1392-9

ABSTRACT:  Characteristics of the motion of a plasma current across an inhomo-
geneous transverse magnetic field of fairly high intensity were studied.   It
is shown that in a strong magnetic field a complete cessation of the injected
jet and its reflection from the magnetic barrier occurs.  The occurrence of a
polarized interaction of the injected and reflected currents is the cause of
the development of an instability and entrapment of the plasma in the direc-
tion of the lines of force of the magnetic field.

The article includes 6 equations and 7 figures.  There are 26 references.

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USSR

LOMIZE, G. M., Doctor of Technical Sciences, IVASHCHENKO, I. N., Candidate of Technical Sciences, ISAKHANOV, YE. A., ZKHAROV, M. N., Engineers

UDC 627.824.33:624.042.6.001.24

"The Deformability, Strength and Creep of Clayey Soils in Cores of High Head Water Dams"

Abstract:  The article gives a general formulation of the question of calculation of the cores of high head water dams and the problem of research on the initial equations of the stress-deformed state in the regions before and after the limit.  It is shown that the stress-deformed state must be evaluated for various load trajectories, and that the influence of creep processes in various load regimes within time must also be studied.  Results of experimental study of the deformability of clayey soils under conditions of simple and complex (according to Il'yushin) loading with a stationary position of the axis of the main stresses and

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USSR

IOMIZE, G. M., Gidrotekhnicheskoye Stroitel'stvo, No 11, Nov 70,
pp 26-31

with a turn of these axes are set forth, as well as results of
research on creep in two loading regimes in time: at a constant
rate of deformation or at a constant stress velocity. 14 figures,
3 tables, 2 footnote bibliographic references, 7 bibliographic
entries.

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USSR.

LOMKOVSKAYA M. V.

UDC 51:801

"k-Provisional and Other Commutative Grammars"

Translation: The study of k-provisional grammars introduced and investigated by the author is continued here. The place of these grammars with respect to the grammars with constraints on the output characteristics— grammars such as program, matrix and ordered grammars and also unconditional program (faculta- tive) grammars -- is explained. The combinations of different generation mechanisms are also investigated.

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USSR

GRODZINSKIY, E. YA., LOMONOSOV, L. I.

UDC 621.357.8

"Electrochemical Profile Grinding of a Hard-Alloy Cutting Tool"

V sb. Novoye v elektrofiz. i elektrokhim.obrabotke materialov (What's New in Electrophysical and Electrochemical Treatment of Materials -- collection of works), Leningrad, Mashinostroyeniye Press, 1972, pp 56-58 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L307)

Translation: The studies performed demonstrated that the electrochemical pro-file grinding of a hard alloy cutting tool by an AC graphite disc tool permits a surface roughness corresponding to class 8 to be obtained with an output rate of 20-25 $mm^3$/min. The absence of microcracks and a variable surface layer on the product insures good operating characteristics of the hard alloy tool. The relative simplicity of the process, cheapness and absence of wear of the tool and the high quality of the products make this process economically advantageous and prospective.

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USSR

GRODZINSKIY, E. YA., LOMONOSOV, L. I.

UDC 621.357.035.4:621.79.027(088.8)

"Electrolyte for Electrochemical Machining of Hard Alloys"

USSR Author's Certificate No 313639, filed 10 Jan 69, published 18 Nov 71 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L312P)

Translation: An electrolyte has been patented for electrochemical machining of hard alloys with NaF as the activating substance. The electrolyte is distinguished by the fact that in order to increase the output capacity, additional Na carbonate is introduced into the electrolyte solution with the following ratio of components (in weight %): $Na_2CO_3$ 2-6, NaF to 1, the rest solvent.

I.   Probability Theory and Mathematical Statistics
     A.   Probability Theory

USSR

LOMONOSOV, M. V., POLESSKIY, V. P.

"The Maximum Probability of Connectedness"

Probl. Peredachi Inform. [Problems of Information Transmission], 1972, Vol 8,
No 4, pp 68-73 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973,
Abstract No 4V9, by V. Prelov).

Translation:  Suppose G is a full graph with n points. Let us assume that
each rib u of this graph, regardless of the others is eliminated with proba-
bility $x_u$.  It is proven that in the case when $\Pi x_u = \xi > 0$ is fixed, the
probability of connectedness of the graph produced after this operation of
rib elimination is maximal if all ribs of full graph G are eliminated with
identical probability $x_u = \xi 1/C_n^2$.

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USSR

UDC 578.087.87

SEMENENKO, A. D., Moscow State University imeni M. V. Lomonosov and Institute of Plant Physiology imeni K. A. Timiryazev, Academy of Sciences USSR, Moscow

"Electrophytogram of the Beat Rhythm"

Moscow, Doklady Akademii Nauk SSSR, Vol 206, No 3, 1972, pp 751-754

Abstract: The spontaneously arising beat rhythm (length of period $T = 0.2-3.5$ sec, amplitude $A_{max} = 100-250$ µv, $A_{min} = 2-30$ µv) of young Mimosa pudica, Phaseolus vulgaris, Primula veris, and Begonia lucerna plants and also of plants of other species was studied on the basis of automatically recorded electrophytograms of auto-oscillations measured by means of two Pt electrodes applied to leaf tips. An electroencephalograph with an integrator and frequency analyzer and a polyphysiograph were used in recording. To treat some time data, special equipment (a recorder and equipment for automatic printing and perforation) was used that had been developed at the Institute of General and Communal Hygiene, Academy of Medical Sciences USSR. The frequency, amplitude, and length of period varied depending on the physiological condition of the plants and the time of the day. $T$ of the $\alpha$-rhythm in the early morning hours was $0.1-1$, $0.5-1.5$, $3.5-4$, and $3-3.5$ sec for M. pudica, P. veris, P. vulgaris, and B. lucerna, respectively. $T$ of the $\beta_B$ rhythm for B.

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USSR

SEMENENKO, A. D., Doklady Akademii Nauk SSSR, Vol 206, No 3, 1972, pp 751-754

lucerna was 0.8 sec. Dominant rhythm waves (e.g., α and θ for P. vulgaris) were accompanied by accessory waves that had approximately the same frequency, but a lower amplitude. The beat rhythms were most pronounced at the end of the day and in other transitional periods in which the response of the plants to external stimuli was greatest. Experiments in which determination of re- duced ascorbic acid in the leaves by titration with 2,6-dichlorophenolindophenol was carried out parallel with the recording of beat rhythms showed that the con- tent of ascorbic acid was at a maximum before the appearance of these rhythms and then again at the time at which they were recorded. These results agreed with those obtained in earlier work by the author (DAN SSSR, Vol 151, No 5, 1963) in which it was established by motion picture photography that the fluc- tuations of the ascorbic acid content in the early morning and evening were accompanied by rhythmic pulsating motions of the plants of a type similar to that of the beat rhythm. (Submitted by Academician A. A. Kursanov, 17 Jan 72)

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# BIOLOGY

## Bionics

USSR

UDC 577.15+577.3.001.57+557.3:535.2/.3.04

BEREZIN, I. V., VARFOLOMEYEV, S. D., and MARTINEK, K. Moscow State University imeni M. V. Lomonosov

"Cis-Trans-Isomerization of Cinnamoyl-α-Chymotrypsin Under the Effect of Light, and Modeling of Molecular Mechanisms of Optical Reception"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 4, Aug 70, pp 932-935

Abstract: Only recently has the experimental basis for representing the mechanism of the primary act of photoreception been established. Modeling of this process is of extreme importance, because it is easier to study and comprehend the overall physical and chemical aspects of the molecular mechanisms of light in biological systems. In addition modeling the photoreception mechanism, as an element of chemical bionics, may lead to the creation of artificial, light-sensitive systems operating according to the principle of the visual organs of animals. The absorption of light quanta in the photoreceptor cells of the retina affects many light-sensitive pigments. All the pigments contain as a chromophoric group an 11-cis-retinal group, bonded in the form of a Schiff's base to the $NH_2$-group of specific albumins. The first stage of the mechanism of vision includes the following processes: 1) trans-photostereoisomerization of the 11-cis-retinal

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USSR

BEREZIN, I. V., et al, Doklady Akademii Nauk SSSR, Vol 193, No 4, Aug 70, pp 932-935

group, 2) the dark process, which is a chain of conformational changes of appro-
tein, with the last reaction a hydrolysis step leading to the formation of free
all-transretinal and opsin; 3) the further course of the transformation process of
light consists of signal amplification, (which may be enzymatic). These processes
were studied with certain chymotrypsin derivatives proposed as models. Deacyla-
tion of cis-cinnamoyl-ɑ-chymotrypsin, synthesized by the authors, does not take
place even at the optimum pH for the catalytic action of chymotrypsin. Rather,
the compound has to be converted into the trans-isomer by irradiation with UV
light, which is rapidly deacylated into trans-cinnamic acid and the free enzyme.
The enzymatic photo-initiation process leads to an amplification of the primary
light signal as a result of the accumulation of reaction products.

USSR                                    UDC 591.1.05

PIRUZYAN, L. A., GLEZER, V. M., DEMENT'YEV, V. A., LOMONOSOV, V. A., and
CHIBRIKIN, V. M., Institute of Chemical Physics, Academy of Sciences USSR

- "The Mechanism of the Biological Effect of Permanent Magnetic Fields"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 4, 1970,
pp 535-539

Abstract:  This review of the Soviet and foreign literature on the biological
effect of magnetic fields discusses the effects of a permanent magnetic field on
the electrical properties of axons, the rate of chemical reactions associated
with free radicals in nervous tissue, the effects produced by impairment of
spatial orientation of biomolecules, and conformational changes in protein
mitochondria.  The effects of a permanent magnetic field on electrolytes, water,
and currents circulating in living systems are treated at some length.

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USSR

PIRUZYAN, L. A., GLEZER, V. M., LOMONOSOV, V. A., BARSEGYAN, L. KH., KHAVKINA,
L. S., Institute of Chemical Physics of the USSR Academy of Sciences

"Effect of a Constant Magnetic Field on the State of the Blood System of Mice"

Abstract: A study was made of the effect of a constant magnetic field on the
state of the blood system and the free radical content in the blood of mice.
The constant magnetic field intensity was 5,000 oersteds for exposure times
of 4, 24 and 72 hours. After exposure to a constant magnetic field, the number
of erythrocytes, reticulocytes and leukocytes in the blood of mice increases,
the hemoglobin content increases, the erythrocyte production per cubic milli-
meter of blood per day increases, and the free     radical content increases.
A change in the qualitative composition of the erythrocytes expressed in an
increase in the number of cells of increased stability is observed. A
correlation between the number of erythrocytes, reticulocytes, the diurnal
erythropoiesis and the variation in free radical activity of the blood of
mice after the effect of a constant magnetic field were established. Analysis
of the dynamics of the variations of the hemotologic indexes and free radical
activity in the blood of mice after the effect of the constant magnetic
1/2

USSR

PIRUZYAN, L. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1972, pp 142-145

field shows that they are of a monotypic nature.

UNCLASSIFIED          PROCESSING DATE--16OCT70

1/2    010
TITLE--THEORY OF (PI PRIME POSITIVE, 2P) REACTIONS ON LIGHT NUCLEI -U-

AUTHOR-(02)-KOLYBASOV, V.M., LOMONOSOVA, T.A.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(3), 578-88

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LIGHT NUCLEUS, MESON INTERACTION, PION, PARTICLE PRODUCTION,
PROTON, ANGULAR DISTRIBUTION, ENERGY SPECTRUM, EXCITATION CROSS SECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/1042          STEP NO--UR/0367/70/011/003/0578/0588

CIRC ACCESSION NO--AP0110732
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0110732

ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.  THE PROBLEM OF THE MECHANISM OF
(PI PRIME POSITIVE, 2P) REACTIONS ON LIGHT NUCLEI HAS TREATED.  TWO OF
THE SIMPLEST MECHANISMS:  THE D AND THE ALPHA PARTICLES MECHANISMS ARE
COMPARED.  THE FOLLOWING QUANTITIES WERE OBTAINED:  THE CROSS SECTION
ENERGY DEPENDENCE OF THE (PI PRIME POSITIVE, 2P) REACTION, THE MOMENTUM
AND ENERGY DISTRIBUTIONS OF RECOIL NUCLEI, THE ANGULAR CORRELATION OF 2
FAST P, THE ENERGY DISTRIBUTION OF THE RELATIVE MOTIONS OF W P, AND THE
DISTRIBUTION OF THE SUMMARY IMPULSE AND ITS ANGLE UPON THE DIRECTION OF
THE PI MESON.   FURTHER, THE CHARACTERISTICS FO THE RESIDUAL NUCLEUS,
AND THE ENERGY DEPENDENCE OF THE CROSS SECTION OF PRIME6 LI(PI PRIME
POSITIVE, 2P) PRIME4 HE REACTION WERE ALSO STUDIED.  K. AND L. COMPARE
THE SENSIBILITY OF THESE PARAMETERS TO THE MECHANISM OF THE PROCESS.
THE COMPARISON OF THE THEORETICAL AND EXPTL. RESULTS IS DIFFICULT,
BECAUSE IN MANY EXPTS. THE EVENTS ON HEAVY AND LIGHT NUCLEI ARE NOT
SEPD., AND IN OTHER CASES THE EXPTL. CONDITIONS ARE GIVEN WITHOUT THE
GEOMETRY OF THE INSTALLATION.          FACILITY:  INST. TEOR. EKSP. FIZ.,
MOSCOW, USSR.

UNCLASSIFIED

USSR

LIPCHIN, T. N. et al., Izvestiya VUZov: Chernaya Metallurgiya, No 11, 1972, pp 161-163

casting, and by a factor of 20 as compared with sand-mold casting).  These conditions also increase the dislocation density by nearly an order of magnitude as compared with sand-mold casting.  All three casting methods gave the same density.  The nonequilibrium conditions obtaining during pressure die casting result in slight supersaturation of the solid solution, which makes heat-treat hardening ineffective.

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- 19 -

AKHVLEDIANI, M. S., LOKIA, G. Sh., LOKCURI, I. D., Tbilisi State University

"Synthesis and Acetylcholine-like Activity of Acetylphosphorylcholine"

Abstract: Acetylphosphorylcholine was synthesized by treating phosphorylcholine
with acetic anhydride. Acetylphosphorylcholine and phosphorylcholine were
separated by electrophoresis (ammonia-acetic acid buffer, pH = 8.0) and also
by paper chromatography in various solvents. The best solvent was butanol-
ethanol-acetic acid-water (8:2:1:3) in which the Rf is 0.25 for acetylphosphoryl-
choline, 0.15 for phosphorylcholine, 0.45 for acetylcholine, and 0.30 for
choline. Biological tests indicate that acetylphosphorylcholine behaves like
acetylcholine in muscle cells.

1/1

USSR

AKHVLEDIANI, K. S., LOGUA, G. SH., KEKENADZE, L. V., and LOMOURI, I. D.
Tbilisi State University

"A Method of Direct Microdetermination of Phosphorylcholine and Some Other
Esters of Phosphoric Acid"

Abstract:  A new method of direct microchemical determination of phosphoryl-
choline based on a change in the optical density of a phosphomolybdate solution
has been developed.  A phosphorylcholine solution ($0-240$ $\mu$g/ml) is added to
a reagent solution containing 2% phosphomolybdic acid acidified with 0.1 N HCl
to pH $5.3\pm0.1$.  Optical density is measured at $\lambda = 358$ m$\mu$ and the level of
phosphorylcholine is determined from a calibrated titration curve.  This
method is suitable for determination of other phosphate and pyrophosphate
esters.

1/1

USSR

UDC 662.766

AKHVLEDIANI, K. S., LOGUA, G. SH., LOMOURI, I. D., Tbilisi State University

"Synthesis of Acetylphosphorylcholine and Its Acetylcholine-like Activity"

Tbilisi, Soobshcheniya Akademii Nauk Gruzinskoy SSR, No 2, 1972, pp 465-467

Abstract: Acetylphosphorylcholine was synthesized to check the proposition that in the case of fermentative acetylation of phosphorylcholine, not acetylcholine but acetylphosphorylcholine is formed which has acetylcholine-like biological activity. The acetylphosphorylcholine and phosphorylcholine were analyzed by radio activity. The substances were separated by paper chromatography and electrophoresis. The acetylcholine activity was tested on the musculus rectus abdominis of a frog. The proposition was proved correct.
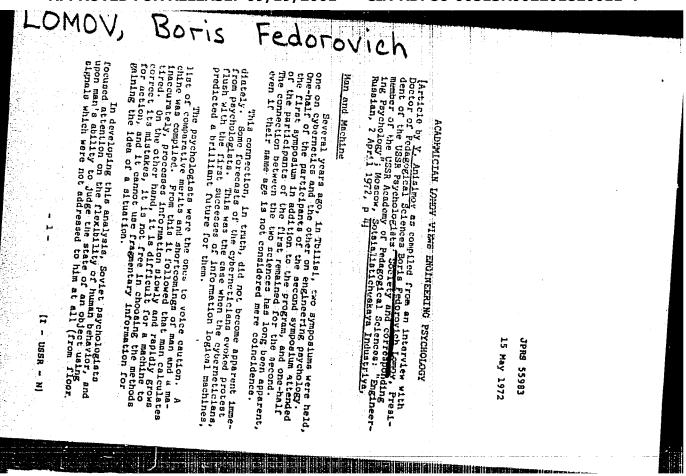
1/1

Lomov, B.

Management Sciences

LOMOV, B.

*Psychology*

2/2

9.  USSR

B.  Sociocultural Base

1.  Engineering Psychology

LOMOV, B., Corresponding Member of the Academy of Pedagogical Sciences, Doctor
of Psychological Sciences, Professor, RUBAKHIN, V., Doctor of Psychological Sciences,
and SUKHODOL'SKIY, G., Candidate of Psychological Sciences

"Man and Technology"

Moscow, Sotsialisticheskiy Trud, No 5, May 71, pp 83-90

Abstract: Trends in modern production and stages of development of engineering
psychology, the basic problem of psychophysiology -- establishing of the
characteristics of information reception and processing by man -- systems engineering
in connection with consideration of the capability of man in planning and designing
large systems, operation and maintenance in connection with the psychophysiological
qualities and capabilities of man, and the engineering-pedagogical area dealing with
the psychological basis for principles and methods of professional selection and train-
ing of operators are discussed. Problems in the field of engineering psychology are
outlined the solution of which permits the discovery of unused reserves of productivity
of labor of specialists in various professions.

1/2

LOMOV, Boris Fedorovich

## ACADEMICIAN LOMOV VIEWS ENGINEERING PSYCHOLOGY

[Article by V. Anisimov as compiled from an interview with Doctor of Pedagogical Sciences Boris Fedorovich Lomov, President of the USSR Psychologists' Society and corresponding member of the USSR Academy of Pedagogical Sciences: "Engineering Psychology"; Moscow, Sotsialisticheskaya Industriya, Russian, 2 April 1972, p 4]

<u>Man and Machine</u>

Several years ago, in Tbilisi, two symposiums were held, one on cybernetics and the other on engineering psychology. One-half of the participants of the first symposium attended the first symposium in addition to the second symposium attended or the participants of the first remained for the second. The connection between the two sciences has long been apparent, even if their same age is not considered mere coincidence.

This connection, in truth, did not become apparent immediately. Some forecasts of the cyberneticians evoked protest from psychologists. This was the case when the cyberneticians flush with the first successes of information logical machines, predicted a brilliant future for them.

The psychologists were the ones to voice caution. A machine was compiled. From this it followed that man and a machine inaccurately, processes information slowly and rapidly grows tired. On the other hand, it is difficult for a machine to correct its mistakes, it is not free in choosing the methods for action, and it cannot use fragmentary information for gaining the idea of a situation.

In developing this analysis, Soviet psychologists focused attention on the flexibility of human behavior, and upon man's ability to judge the state of an object using signals which were not addressed to him at all (from floor.

- 1 -

[I - USSR - N]

USSR

UDC 621.317.75:621.317.018

KOTLYAROV, O. P., and LOMOV, G. I.

"A Synchronous Marker of Electrical Angles"

Translation: A description is given of a marker which makes it possible to obtain calibrating pulses, the distance between which in terms of electrical degrees remains invariable with a change of the input-voltage frequency within a wide range. The circuit of a marker with a photoelectromechanical rotation angle — pulse number converter is presented. This marker can be used in the oscillography of electrical processes, in units for the generation of variable-frequency voltage, in units powered by alternating-current sources, or in measuring instruments, as a quantizing pulse generator. 1 figure. 8 bibliographic entries.

1/1

USSR

UDC 621.355.8.035.2

KUDRYASHOVA, G. M., MOKHNATIKIN, V. M., LOMOV, M. I., and KOLOSOV, A. S.

"Concerning the Problem of the Structure of a Two-Phase Flow in a Densely Packed Energizer Stack"

V sb. Issled. v obl. khim. istochnikov toka (Research in the Field of Chemical Sources of Current -- collection of works), vyp 2, Saratov, Saratov. un-t, 1971, pp 58-61 (from RZh-Khimiya, No 18, Sep 72, Abstract No 18L179)

Translation: Analysis of the distribution of the gas-liquid mixture between close-stacked plates of alkaline energizers shows that when materials of the nylon type are used as the separation between electrodes, continuous liquid and gas phases exist simultaneously in the interelectrode gap. V. S. Levinson.

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USSR

LOMOV, O. P.

UDC 612.017(470.1)

"General Immunological Reactivity During Acclimatization in the North"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 6, 1971, p 87

Translation:  Change in general immunological reactivity, i.e., the potential
capacity of the body for nonspecific resistance, is a highly sensitive test
of the effect of climatic and geographic conditions on man.  Several investi-
gators have found that it diminishes in healthy persons living in the North.
    The purpose of our work was to elucidate the role of acclimatization in
the alteration of general immunological reactivity in persons newly arrived
in the North from different climatic and geographic parts of the country in
relation to the time spent in the North (1 to 3 years).  General immunological
reactivity was determined by V. I. Ioffe's method in healthy males 19 to 23
years of age living in an organized group during the period preceding the
polar night (November), after it (March, and during the period of the polar
day (July).  We used immune sera of series 708 with titers of 1.180 and 1.225
that we obtained from the Microbiology Department of the Institute of Experi-
mental Medicine.
    The studies showed that the general immunological reactivity of these
individuals was affected.  It decreased more after the polar night than
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USSR

LOMOV, O. P., Voyenno-Meditsinskiy Zhurnal, No 6, 1971, p 87
during the period of the polar day (by a factor of 2). The decrease was most
pronounced in those who came from the southern parts of the USSR and in
individuals during their first year in the North.

It increased sharply during the period of the polar day, especially
in native northerners and in those who were in the North    for 3 years. It
increased least of all in the southerners and in those living in the North the
first year.

2/2

USSR                                              UDC:  621.396.6-181.5

DENISOV, A. I., DOBROVOL'SKIY, G. F., LONDVTSEV, A. M., STROYEV, I. S.,
Active Members of the Scientific and Technical Society of Radio Engineering,
Electronics and Communications

"Setting and Mounting Micromodules With Planar Leads on Printed Circuit Borads"

Moscow, Radiotekhnika, Vol. 26, No 5, May 71, pp 99-101

Abstract:  A new method is proposed for stand-off mounting of micromodules
with planar leads on printed circuit boards.  Essentially, the module is held
away from the board by a "bridge" of lacquer.  After completion of the mounting
process, the "bridge" is destroyed by heat.  With the proposed method, the
entire process of assembly can be mechanized and simultaneously shortened.
Sources of contamination which have an adverse effect on the electrical para-
meters of the board can be completely eliminated, and the finished units can
be repaired.

1/1

UNCLASSIFIED
TITLE--REMARKS ON THE BROKEN NONLINEAR CHIRAL U,3, TIMES U,3, DYNAMICS OF
   HADRONS -U-

PROCESSING DATE--27NOV70

AUTHOR-(02)-SABO, V.I., LOMSADZE, YU.M.

COUNTRY OF INFO--USSR

SOURCE--ITF-70-20 1970. 14P. DEP. CFSTI

DATE PUBLISHED-------70


SUBJECT AREAS--PHYSICS

TOPIC TAGS--STRONG NUCLEAR INTERACTION, ELECTROMAGNETIC INTERACTION,
   PARTICLE SYMMETRY, MATRIX FUNCTION


CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1916

STEP NO--UR/0000/70/000/000/0014/0014

CIRC ACCESSION NO--AT0127317
                    UNCLASSIFIED

CIRC ACCESSION NO--AT0127317

ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.   IN CONTRAST TO PREVIOUS WORK THE
  BROKEN NONLINEAR CHIRAL U(3) TIMES U(3) DYNAMICS OF STRONG,
  ELECTROMAGNETIC AND WEAK INTERACTIONS OF HADRONS IS CONSIDERED IN THE
  MOST GENERAL FORM.   SUCH A GENERAL CONSIDERATION REDUCES THE NUMBER OF
  PREDICTIONS ONL BUT DOES NOT CHANGE THEM.   (AUTH).              FACILITY:
  AKADEMIYA NAUK UKRAINSKOI SSR, KIEV. INSTITUT TEORETICHESKOI FIZIKI.

UNCLASSIFIED

1/2     024              UNCLASSIFIED           PROCESSING DATE--27NOV70
TITLE--SCATTERING BY NONPHYSICAL POTENTIALS: ANALYTICITY IN COUPLING
   CONSTANT -U-
AUTHOR--LOMSADZE, YU.M.

COUNTRY OF INFO--USSR

SOURCE--UKR. FIZ. ZH.: 15: 237-44(FEB. 1970)

DATE PUBLISHED-------70


SUBJECT AREAS--PHYSICS

TOPIC TAGS--SCATTERING AMPLITUDE, WAVE MECHANICS, VOLTERRA EQUATION



CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/2295       STEP NO--UR/0185/70/015/000/0237/0244

CIRC ACCESSION NO--AP0127646
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0127646

ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.  A GENERAL METHOD FOR INVESTIGATING
THE NONRELATIVISTIC SCATTERING BY ARBITRARY "NONPHYSICAL" POTENTIALS
LAMBDA V (R) GREATER THAN O(R PRIME NEGATIVE2) WITH R YIELDS 0 IS GIVEN
REDUCING THE PROBLEM OF CALCULATING THE PARTIAL WAVE SCATTERING
AMPLITUDE TO SOLVING THE INHOMOGENEOUS VOLTERRA EQUATION WHICH IS
ITERABLE AN ARBITRARY NUMBER OF TIMES.  THE EFFICIENCY OF THE METHOD IS
ILLUSTRATED WHEN STUDYING THE ANALYTICAL PROPERTIES OF THE AMPLITUDE
WITH RESPECT TO VARIOUS VARIABLES AND, IN PARTICULAR, WITH RESPECT TO
THE VARIABLE LAMBDA WHICH IS THE "INTERACTION INTENSITY".  IN SPITE OF
THE SCATTERING BY "PHYSICAL" POTENTIALS LAMBDA V (R) SMALLER THAN OR
EQUAL TO O(R PRIME NEGATIVE2) WITH R YIELDS 0 THE SCATTERING AMPLITUDE
FOR "NONPHYSICAL" POTENTIALS INEVITABLE POSSESSES BOTH AN IMMOVABLE
SINGULARITY AT THE POINT LAMBDA EQUALS 0 AND ESSENTIAL SINGULARITY IN
THE S-PLANE AT INFINITY.          FACILITY:  UZHGOROD STATE UNIV., USSR.

UNCLASSIFIED

USSR

UDC: 622.375.122

LYADOV, B. N., BLINKOV, Yu. V., LOMTEV, Ye. A., SHLYANDIN, V. M., Penza
Polytechnical Institute

"A Multistage Amplifier"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 11, Apr 72, Author's Certificate No 333675, Division H, filed 3 Aug 70,
published 21 Mar 72, p 220

Translation: This Author's Certificate introduces a multistage amplifier
for AC signals based on transistors connected in a common-emitter circuit.
As a distinguishing feature of the patent, the operating stability of the
amplifier is improved with respect to direct current and the device is sim-
plified by joining together the emitters of all transistors in the odd stages
and the emitters of all transistors in even stages, and connecting them to
the common line of the amplifier through RC bias networks which are common
for the joined transistors. The collector of the transistor in each pre-
ceding stage is connected to the base of the transistor in each following
stage through a resistive divider.

1/1

USSR

UDC 681.355

BELYAKOV, V. M., BLINKOV, Yu. B., LOMTEV, Ye. A., and SHLYANDIN, V. M.

"Time Interval-to-Digital Code Converter"

Translation:  A time interval-to-digital code converter is suggested, con-
taining forming flip-flops, a collector circuit, digital memory registers,
and a delay line with taps.  The outputs of the delay line are connected to
the inputs of the collector circuit; the outputs of the collectors circuit
are connected to the first input of the forming flip-flop, the second input
of which is connected to the last delay line output; the inputs of the
digital memory registers are connected to the outputs of the delay line.
In order to simplify the converter, it contains coincidence circuits, a
pulse expander, and a shift register.  The input of the delay line is
connected to the input of the shift register and the output of the coin-
cidence circuit; the input of the coincidence circuit is connected to the
output of the forming flip-flop, one input of which is connected to the
"clear" terminal, while the other is connected to the input of the delay

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USSR

line. The enabling inputs of the memory registers are connected to the first inputs of the digital coincidence circuits. The outputs of the coincidence circuits of the digits are connected to the output of the forming flip-flop of the collection circuit; the second inputs of the digital coincidence circuits are connected to the outputs of the shift register, while the input of the forming flip-flop of the collecting circuit is connected to the input of the pulse expander, the output of which is connected to the first input of the coincidence circuit. The second input of the coincidence circuit is connected to the last output of the shift register, and the output of the coincidence circuit is connected to the input of the delay line. 2 figs.

2/2

- 100 -

1/2     020                    UNCLASSIFIED              PROCESSING DATE--23OCT70
TITLE--PARAPROSTATIC NOVOCAINE ANTIBIOTIC BLOCKADE IN COMBINATION WITH
    HYDROCORTISONE IN THE COMPLEX THERAPY OF PROSTATITES -U-
AUTHOR-(04)-TOVSTOLES, K.F., SOROKA, V.G., LOMYSKIN, A.I., SAMOYLOV, N.A.

COUNTRY OF INFO--USSR

SOURCE--VR 5, PP 72-75

DATE PUBLISHED--------70


SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--REPRODUCTIVE SYSTEM, GENITOURINARY SYSTEM DISEASE, ANALGESIS
    DRUG, ANTIBIOTIC, HYDROCORTISONE



CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/2047        STEP NO--UR/0206/70/000/005/0072/0075

CIRC ACCESSION NO--AP0122276
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0122276
ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.  THE AUTHORS DEVELPED PROPER
TECHNIQUE FOR PERFORMANCE OF BLACKADES IN 10 MALE CAVADERS.  AFTER THAT
A COMPLEX TREATMENT OF 99 PATIENTS WITH PROSTATITIS USING PARAPROSTATIC
NOVOCAINE BLOCKADES IN COMBINATION WITH ANTIBIOTICS AND HYDROCORTISONE
WAS CARRIED OUT.  AMOUNG THE PATIENTS 20 HAD ACUTE AND 79 CHRONIC
PROSTATIS.  FROM 2 TO 5 BLOCKADES WERE USED PER COURSE.  A TOTAL OF 393
BLOCKADES WERE PERFORMED.  THE TREATMENT WAS GIVEN IN 71, IMPROVEMENT,
IR, 15, NO EFFECT, IN 13 CASES.  TREATMENT OF PROSTATITES WITH
PARAPROSTATIC NOVOCAINE ANTIBIOTIC BLOCKADES IN COMBINATION WITH
HYDROCORTISONE IS AN EFFECTIVE METHOD WHICH MAY BE USED BY EVERY
PHYSICIAN.          FACILITY:  KAFEDRA UROLOGII VOYENNO-MEDITSINSKOY
AKADEMII IM. S.M. KIROVA, LENINGRAD. GORODSKAYA DERMATO
VENEROLOGICHESKAYA BOL'NITSA,              FACILITY:  LENINGRAD.
KOZHNO-VENEROLOGICHESKIY DISPANSER NO 14.

Acc. Nr.: *AP0100668*

Ref. Code: *UR 0381*

USSR

BORDYUGOV, G. T., LONCHAK, V. A., SHAPOVALOV, P. F., and BANAU, D. S.

UDC: 620.179.16

"Improving the Noise Immunity of the Mirror-Shadow Ultrasonic Control Method"

Sverdlovsk, Defektoskopiya, No. 1, 1970, pp 11-13

Abstract: The mirror-shadow ultrasonic control method operates on the principle that the transmitter and receiver of the ultrasonic signal are mounted to one side of the product, with the received signal taken from the surface at the opposite side. A defect is indicted by a reduction in the signal amplitude below some pre-determined threshold level. The effect of noise is to reduce the signal amplitude even though there is no defect, and the result is the unjustified discard of a normal product. This article describes an improved defectoscope using the mirror-shadow method designed for better noise immunity through the use of coded radiation of the ultrasonic signal. A block diagram of the new system is given together with a short explanation of how it works.

1/2

Reel/Frame
19850137

EB 21

USSR                                                    UDC 621.382.2

GONCHAROV, V. N., KLYUCHNIKOV, V. N., KRYLOV, L. N., LAVRISHIN, Yu. A.,
LONCHIN, M. A., SEREZHKIN, Yu. N., UCHAYKIN, I. G., and YAMASHKIN, Yu. M.

"Role of Microplasma Phenomena in Determining the Properties of Silicon
Avalanche Rectifiers"

Translation:  The effect of microplasma phenomena on the characteristics of avalanche
rectifiers is considered.  A model of the microplasma is presented and the reasons
for formation of microplasm are considered.  The distribution of microplasm in
avalanche rectifiers is presented for the area of the p-n junction and for breakdown
voltages.  Means are considered for an increase of the breakdown energy of avalanche
rectifiers.  Summary.

1/1

TITLE--CALCULATION OF DISSOLVED GAS PRESSURE IN MINERALIZED STRATAL WATER OF OIL AND GAS DEPOSITS -U-

AUTHOR--LONDON, E.YE.

COUNTRY OF INFO--USSR

SOURCE--GEOL. NEFTI GAZA 1970, 14(2), 51-4

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--THERMODYNAMIC PROPERTY, NATURAL GAS, CRUDE OIL, WATER, PETROLEUM DEPOSIT, GEOGRAPHIC LOCATION, STATISTICAL ANALYSIS, ABSORPTION, CALCIUM CHLORIDE, SODIUM CHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/2094          STEP NO--UR/0009/70/014/002/0051/0054

CIRC ACCESSION NO--AP0127467
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0127467          UNCLASSIFIED          PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.  A THERMODYNAMIC METHOD IS USED FOR
CALCN. OF THE PHASE EQUIL.  SOME FACTORS USED IN A STUDY OF THE
INTERRELATION OF STRATAL WATERS AND OIL GAS CONCN. INCLUDE INTENSITY OF
DISSOLVED GAS SATN., THE PARTIAL PRESSURES OF SEP. GASES FORMING THE
MIXT., AND THE BED ATMS. THAT CAUSE DISSOLVED GAS SATN. IN STRATAL
WATERS AT HIGH TEMPS. AND DEPTHS.   WHEREAS, IN ABSORPTION BY H SUB2 O,
THE AMTS. OF GAS CHANGE INVERSELY WITH MINERALIZATION, THE GAS SOLY. IS
CONTROLLED BY THE SUM OF THE H SUB2 O-SOL., CONCD. MINERAL SALTS AND
DOES NOT DEPEND ON THE QUAL. PROPERTIES OF THEIR SEP. IONS.  THE TOTAL
MOL. CONCN. IN DEPTH CAN BE EXPRESSED IN MEQUIVS. AND DETD. AS A SUM OF
THE ONE FOURTH (TOTAL MINERALIZATION) AND THE ONE HALF (MINERALIZATION
OF THE MONOVALENT ELEMENTS).  FROM EXPTS., THE RATIO WAS DETD. AS
0.4:0.2 FOR CHANGES IN SP. GR. OR D., OF MIXED BRINES CONTG. CACL SUB2
AND NACL WITH DEPTH; THEY FORM SIMILIAR TO 5.5 MOLS. IN A VOL. UNIT.  BY
USING THIS EQUATION, DATA HAVE BEEN DETD. FOR CAMBRIAN OIL IN THE
IRKUTSK REGION OF SIBERIA AT 3 FIELDS.

UNCLASSIFIED

- USSR

LONDON, G. Ye.

"Determining the Parameters of a Correcting Device for Heat Sensors by Using Spectral Characteristics"

Abstract: The author discusses the problem of determining the parameters of a two-terminal pair network used for compensating lag in contact instruments for measuring local temperatures. A relation is found for the physical and geometric parameters of the sensor as functions of the intensity of heat exchange and the electric parameters of the correcting device. It is shown that the derived expressions can be used to find the parameters of the correcting device with the spectral method of circuit and signal analysis. It is assumed that the region of significant frequencies of the spectral function of the input signal is known as well as the possible deviation of measurement circuit parameters which influence this frequency range. Practical suggestions are made on applying the proposed formulas for temperature measurement on aerodynamic models in shock

1/2

USSR

tubes. The author thanks Professor I. P. Ginzburg for his continued interest and for assistance with the work.

2/2

1/2     020                    UNCLASSIFIED             PROCESSING DATE--09OCT70
TITLE--OF THE MEASUREMENTS FREQUENCY CHANGE OF THE TEMPERATURES BY
   THERMOCOUPLES -U-
AUTHOR--LONDON, G.YE.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK LENINGRADSKOGO UNIVERSITETA, NO 1, MATEMATIKA, MEKHANIKA,
   ASTRONOMIYA, 1970, NR 1, PP 103-108
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, METHODS AND EQUIPMENT

TOPIC TAGS--THERMOCOUPLE, TEMPERATURE DISTRIBUTION, THERMODYNAMIC
   PUNCTION, HEAT TRANSFER RATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0389              STEP NO--UR/0043/70/000/000/0103/0108

CIRC ACCESSION NO--AP0055174
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0055174 .

ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.  A NEW PARAMETER WHICH
CHARACTERISES THE NONSTATIONARY HEAT EXCHANGE BETWEEN A SOLID BODY, GAS
OR LIQUID IS INTRODUCED FOR CONSIDERATION IN THE ARTICLE. THE ANALYSIS
OF THE OBTAINED EXPRESSIONS SHOWS THAT THE PROPOSED PARAMETER GIVES A
FULL DEFINITION OF THE TEMPERATURE CHANGE OF A SOLID BODY IN TIME AS A
FUNCTION OF THE SYSTEM CHARACTERISTIC.

UNCLASSIFIED

USSR

UDC:   621.375.121(088.8)

LONDON, S. Ye., RAUTIAN, V. G., TEMKIN, A. S.

"A High-Frequency Amplifier"

USSR Author's Certificate No 265958, filed 24 Jun 68, published 7 Jul 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D45 P)

Translation: This Author's Certificate introduces an amplifier based on
two identical active elements (tubes or transistors) having a common
input signal source and a common load.  To extend the passband, identical
reactive six-pole phase-difference networks of constant impedance are con-
nected at the input and output of the amplifier.  Connected between the
active elements and the output six-pole phase-difference network is an LC
filter made in the form of two longitudinal circuits which are symmetric
relative to the common bus, and which are formed by equal inductances and
capacitances connected in series with them.  The ends of the primary winding
of a symmetric transformer are connected to one of the capacitors, while
the opposing ends of the secondary are connected to the other capacitor.
The inputs and outputs of the longitudinal circuits are connected respec-
tively by inductances to each other, and by capacitors having equal values
by pairs, to the common bus.
1/1

USSR                                    UDC:   621.396.61:621.396.2

LONDON, S. Ye.

"Wide-Band Radio Transmitters"

Shirokopolosnyye radioperedayushchiye ustroystva (cf. English above), Lenin-
grad, "Energiya", 1970, 150 pp, ill. 61 k. (from RZh-Radiotekhnika, No 11,
Nov 70, Abstract No 11D440 K)

Translation:  The author discusses theory and practice of high-power wide-
-band amplifiers for the short-wave range.  Solutions are given for problems
of designing wide-band communications circuits of various types.  Their op-
timum frequency characteristics are found on the basis of methods of syn-
thesizing linear electrical circuits with the use of digital computers.
Tabulated parameters are given for a large number of circuits, as well as
the circuitry and hardware for various subassemblies.  The book is written
for scientific workers and engineers engaged in the development of wide-band
radio equipment and synthesis of linear selective circuits.  Annotation.

1/1

TITLE--EVOLUTION OF RADIO SOURCES AT LARGE RED SHIFTS -U-

AUTHOR-(03)-DOROSHKEVICH, A.G., LONGAIR, M.S., ZELDOVICH, YA.B.

COUNTRY OF INFO--USSR

SOURCE--MON, NOTIC, ROY. ASTRON. SOC.; 147: 139-48, 1970

DATE PUBLISHED-------70

SUBJECT AREAS--ASTRONOMY,ASTROPHYSICS

TOPIC TAGS--RADIO WAVE PROPAGATION, MODEL, COSMOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605018/F07 STEP NO--UK/0000/70/147/000/0139/0148

CIRC ACCESSION NO--AP0140888
UNCLASSIFIED

CIRC ACCESSION NO--AP0140888

ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.  EVOLUTIONARY COSMOLOGICAL MODELS
  IN WHICH THE RADIO SOURCE POPULATION CAN EXTEND TO LARGE REDSHIFTS ARE
  DISCUSSED.  MODELS INCORPORATING EXPONENTIAL AND POWER LAW FORMS OF
  EVOLUTION OF THE AVERAGE PROPERTIES OF RADIO SOURCES WITH COSMOLOGICAL
  EPOCH HAVE BEEN COMPUTED FOR WORLD MODELS WITH LAMBDA EQUALS 0, OMEGA
  EQUALS I AND OMEGA EQUALS O.   THESE ARE COMPARED WITH THE LATEST
  OBSERVATIONAL DATA AND PREVIOUS ANALYSES OF THE SOURCE COUNTS.   IT IS
  SHOWN THAT EXPONENTIAL MODELS ARE COMPATIBLE WITH THE OBSERVATIONS AND
  DO NOT REQUIRE A SHARP CUTOFF IN THE RADIO SOURCE DISTRIBUTION AT LARGE
  REDSHIFTS.   THE LUMINOSITY FUNCTION OF RADIO SOURCES AT LARGE REDSHIFTS
  MUST EXHIBIT A MARKED MAXIMUM MINIMUM BEHAVIOUR.   THE PHYSICAL
  INTERPRETATION OF DIFFERENT LAWS OF COSMOLOGICAL EVOLUTION IS DISCUSSED.
      FACILITY:   INST. OF APPLIED MATHEMATICS, MOSCOW.

UNCLASSIFIED

USSR                                                        UDC 533.9.08

LONGINOV, A. V.; NIZHNIK, G. Ya.

"New Types of Resonance Systems for High-Frequency Heating of Plasma"

Translation:  New types of resonance systems for excitation of ion-cyclotron or
magneto-sonic waves in plasma are described.  The results are presented of
investigations of a mock-up of a power resonance system for the "Uragan" unit.
5 ill. 5 ref. Summary.

USSR

UDC 533.9.08

LONGINOV, A.V., LITVINOV,A.P., KITEYEVSKIY, L.KH., NICHNIK, G.YA., FROLOV,V.A.

"System For Preliminary Ionization Of Gas In Closed Magnetic Traps"

Vestn. Khar'kov. politekhn. in-ta (Bulletin Of Kharkov Polytechnical Institute),
1970, No 50(98), pp 76-79 (from RZh--Elektronika i yeye primeneniye, No 1,
January 1971, Abstract No 1A238)

Translation:  A system is described for preliminary ionization of gas in closed
magnetic traps. The system includes a high-frequency pulse generator, a modulator,
and a number of electron devices for control and monitoring. A special discharger
for obtaining a short trailing edge is introduced into the generator. The follow-
ing are the basic parameters of the system: power in a pulse, up to 500 kw; oper-
ating frequency, 100 kHz; pulse duration, to 5 microsec. 4 ill. 4 ref. Summary.

1/1

USSR

KALININA, Z. M., VERTIY, I. G., KHISMATULLINA, N. S., LONGINOV, M. E.,
SERGEYEVA, L. V., FILATOV, B. A., ARTEMOVA, S. P., Chelyabinsk

UDC: 669.245:620.183

"Influence of Magnesium on the Structure of Heat-Resistant Nickel-Based
Alloys"

Abstract:  The influence of magnesium on the structure of nickel alloys was
studied under the assumption that magnesium is concentrated primarily along
the grain boundaries and in areas of other defects of the crystalline lattice.
Assuming that a very slight concentration of magnesium could produce an excess
of magnesium at these defect locations and thus hinder the separation of car-
bides and other excessive phases in these locations, facilitating their more
even distribution through the entire volume of the alloy, the authors
turned primary attention to the study of the influence of magnesium on the
form, dispersion and nature of distribution of excess phases in the solid
solution.  It was found that the optimal addition of magnesium to heat
resistant nickel-based alloys decreases dendritic liquation, makes the
excess phases finer and facilitates their more even distribution.  This

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USSR

Kalinina, Z. M., Vertiy, I. G., Khismatullina, N. S., Longinov, M. F.,
Sergeyeva, L. V., Filatov, B. A., Artemova, S. P., Izvestiya Akademii Nauk
SSSR, Metally, No 4, Jul-Aug 73, pp 193-196.

increases the technological plasticity and long-term strength of the metal.
Excess alloying or enrichment of alloys with magnesium from the slag and
lining in the furnace cause an increase in local chemical heterogeneity, in
turn causing the appearance of new excess phases, decreasing the melting point
of the metal in the area of these phases and reducing technological plasticity.

USSR

"Investigation of Plasma Containment in the Magnetic Field of a Racetrack
With Diverter"

Abstract: An experimental study is made of the time of containment of
plasma particles in a racetrack with a diverter. The trap was filled with
plasma by injection from a coaxial source through magnetic slits in the
diverter. It was found that the diverter configuration ensures plasma
equilibrium in a toroidal magnetic field without rotational transformation
of the lines of force of the magnetic field. Two traps can be distinguished
in the system: a corkscrew trap in the diverter, and a toroidal trap. The
particles drift more rapidly in the diverter magnetic field because of plasma
drift in the magnetic slits. The lifetime of the plasma in the diverter $\tau_1$
is independent of the magnetic field H. In the toroidal magnetic field the
lifetime $\tau_2 \sim H$, losses being due both to drift in the diverter and the de-
velopment of instabilities. Since in this experiment a classical diverter
with a continuous metal barrier between the central coil and the wall of the
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ZYKOV, V. G., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 5, May 72, pp 939-945

chamber was used, all charged particles which drift into the magnetic slits of the diverter are neutralized by this barrier. To reduce plasma losses in the diverter, the central diverter coil should be held by local supports with a minimum cross sectional area. Plasma losses on the toroidal sections can be reduced by increasing the number of diverter cells.

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Molecular Biology

FEDOROVA, N. A., and LONSKIY, A. V.

"The Use of Ultrasound to Obtain Chromatin Fractions"

Abstract: Study of the distribution of various proteins along the DNA helix, and evaluation of the specific functions of proteins in specific sections of DNA, are required to explain the significance of the different groups of proteins in the emerging blue-print of chromatin activity. Difficulties arise in the preparation of samples for such a study because of the presence of proteolytic enzymes. Preparations of chromatin from mice livers with a protein: DNA ratio of 2.4:1 were dissolved in 0.01 M tris buffer at pH 8, and subjected to ultrasonic vibrations in a nitrogen atmosphere at a frequency of 1 megacycle, and intensity of 10 volt/cm$^2$ for 30 min. Chromatin obtained in this manner was fractionated on Sephadex columns. The gel filtration method was used to determine the molecular weight of the fractions. The data obtained indicate the formation of DNA-protein complexes, which differ in their composition from similar complexes of native chromatin. It was concluded that the chromatin proteins do not possess a pronounced affinity for specific sections of the DNA helix.

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USSR                                      UDC 612.9.048.6:612.81

LONSKIY, A. V., Chair of Biophysics, Leningrad State University
imeni A. A. Zhdanov

"Studies of the Mechanism of Action of Ultrasound on the Nerve"

Abstract:  The frog sciatic nerve was investigated under conditions
precluding any appreciable generation of heat. Experimental results
confirm the prevalent view that ultrasonic treatment of a nerve re-
duces the amplitude of the action potential and lowers the electri-
cal threshold. These phenomena are ascribed to the effect of cavi-
tation arising in the ultrasound field. It was suggested that the
adverse effects of ultrasound in therapy may also be due to cavita-
tion.

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USSR

UDC 621.35.035.2:669.22

ROSS, A. A., PUUSEPP, M. YA., LOODMAA, V. R., and NIKOL'SKIY, V. A.

"Influence of Some Impurities on the Anode Operation of Porous Silver Electrodes"

Sb. rabot no khim. istochnikam toka. Vses. n.-n akkumulyator. in-t (collection of works on the Chemical Source of Current. All-Union Scientific Study Institue for Storage Batteries), Vyp 7, 1972, pp 185-189 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8L243)

Translation: By plotting the galvanostatic curves of the discharge, it is possible to study the oxidation of silver electrodes in an alkaline environment for the introduction of different impurities into the electrode material or into the electrolyte solution. On the basis of values calculated from experimental data, the value of the coefficient of oxidation of silver and the displacements of the potential of the electrode at the beginning of the observed evolution of oxygen to the potential of the formation of AgO was determined. It was advantageous to use impurities to improve the electrical characteristics of the silver electrode. Compounds being considered for use as additional impurities include $ZrO_2$, $HfO_2$, $Cr_2O_3$ and $Fe_2O_3$.

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1/2    006                      UNCLASSIFIED                  PROCESSING DATE--13NOV70
TITLE--DISTRIBUTION OF OBOLUS PHOSPHORITES IN ESTONIA -U-

AUTHOR-(02)-LOOG, A., KIVIMAGI, E.

COUNTRY OF INFO--USSR

SOURCE--EESTI NSV TEAD. AKAD. TOIM., KEEM., GEOL. 1970, 19(1), 92-4

DATE PUBLISHED-------70


SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MINERAL-DEPOSIT, PHOSPHORUS COMPOUND


CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0011          STEP NO--UK/0470/70/019/001/0092/0094

CIRC ACCESSION NO--AP0119007
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0119007
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.  TWO TYPES OF OBOLUS PHOSPHORITES
   WERE FORMED DURING THE DEVELOPMENT OF THE BALTIC BASIN:  (A) BRACHIOPOD
   CONGLOMERATES, CONSISTING MOSTLY OF ALMOST INTACT SHELLS AND MEDIUM
   GRAINED SAND SITUATED AS THIN LAYERS (SMALLER THAN OR EQUAL TO 1 M) OR
   LENSLIKE FLAT BODIES, AND (B) DETRITIC OBOLUS PHOSPHORITES SANDSTONES
   CONTG. NUMEROUS FRAGMENTS OF SHELLS (DETRITUS) IN A SINGLE THICK
   (SMALLER THAN OR EQUAL TO 4 M) LAYER.   OBOLUS PHOSPHORITES OF THE 1ST
   TYPE ARE DISTRIBUTED IN AREAS LYING WEST OF THE ZONE OF LARGEST
   THICKNESS (IRU-MAARDU AND TSITRE-VALKALA DEPOSITS) AND THOS OF THE 2ND
   TYPE EAST OF THE ZONE (TOOLSE, ASERI, SAKKA, AND NARVA DEPOSITS).  THE
   DISTRIBUTION OF OBOLUS PHOSPHORITES WAS CONTROLLED BY THE FOLLOWING
   FACTORS:   (1) THE PHOSPHORITES ARE RELATED TO THE COASTAL FACIES AND
   THEIR DISTRIBUTION FOLLOWED THE CONFIGURATION OF THE BASIN; (2) THE
   RICHER PHOSPHORITES ARE RELATED TO THE LOWER THICKNESSES (SMALLER THAN
   OR EQUAL TO 5 M) OF SANDY SILTY STRATUM; AND (3) THE PHOSPHORITES ARE
   CONCD. AT THE BASE OF A SANDSTONE SILTSTONE STRATUM IN A VERTICAL
   SECTION.          FACILITY:  TARTU. GOS. UNIV., TARTU, USSR.

UNCLASSIFIED

USSR

UDC 632.95

3

REVEL'SKIY, I. A., IOONSON, V. A., IL'MOYA, K. A., BELOV, V. M., KARAVAYEVA, V. G., LOOG, E. P., SOVAKOVA, T. M.

"The Sensitivity of a Flame-Photometric Detector to Certain Pesticides as a Function of Temperature"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryaz-neniya iri produktov pitaniva, kornov i vnesn. sredy (Works of the Second All-Union Conference on the Investigation of Pesticide Residues and Preventive Contamination of Food Products, Fodder and Environment), Tallin, 1971, pp 102-107 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12M448)

Translation: On a chromatograph of the Melpar Company, a Study was made of the behavior of a single and double-channel flame photometric detector as a function of the temperature of the detector and the thermostat of the columns. The separation of the artificial mixture of pesticides is carried out in a glass column 2 meters long with an inside diameter of 4 mm filled with NR chromosorb with a 3% phase of OV-I. The column was heated for 50 hours in advance at 250°. The evaporator temperature was 250°, the thermostat temperature of the columns and the detector was 75-220°. The flow rates of N2 (the gas-carrier), $H_2O_2$ and air are 80, 150, 20 and 10 cm3/min respectively. In checking the sensitivity of the flame photometric detector, a mixture of methyl parathion, parathion, methylthion and ethion in hexane was used. The amount
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REVEL'SKIY, I. A., et al., Tr. 2-go Vses. soveshch. po issled. ostatkov pes-
titsidov i profilakt. zagryazneniya imi produktov pitaniya, kormov i vnesh.
sredv, Tallin, 1971, pp 102-107

of each component was $10^{-9}$ in a microliter of solution. For a decrease in
background current and the noise level it was necessary to operate at low
temperatures of the flame-photometric detector (but not less than $80-100°$
to avoid condensation of moisture), or with additional cooling of the photo-
multiplier and filter. It is expedient to study the dependence of the back-
ground current and noise level for each new column. The phosphorus channel
is more sensitive than the sulfur channel to temperature variations of the
detector and columns. The background current and noise level for it are ~10
times higher than for the sulfur channel. For the two-channel flame photo-
metric detector, the background current and noise level as functions of the
column temperature were somewhat greater than for the single channel, and as
functions of the detector temperature, somewhat less. The basic deficiencies
of the investigated flame photometric detector are as follows: the filters and
photomultipliers are under the effect of the detector housing temperature; as
a result of internal reflections of light, variation in the parameters is ob-
served on transition to operation with a two-channel detector. The detector
developed at the Special Design Office of the Estonian SSR Academy of Sciences
does not have these deficiencies.
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USSR

REVEL'SKIY, I. A., IOONSON, V. A., IL'MOYA, K. A., KARAVAYEVA, V. G., LOOG,
E. P., SIROTA, T. S.

"Sensitivity of Flame Photometric Detector for Phosphorus-Containing Pesticides
as a Function of the Experimental Parameters"

Translation:  In studying the dependence of the sensitivity of the two-channel
flame-photometric detector to phosphorus-containing pesticides on the experi-
mental parameters, a solution of triethyl phosphate ($I$) in alcohol is used.
The optimal $O_2$ flow rate (20-40 $cm^3$/min), $N_2$ and $H_2$ flow rates were found from
the point of view of sensitivity of the two-channel flame photometric detector.
For an amount of $I$ on the order of $10^{-7}$ grams, the signal of the phosphorus
channel exceeds the signal of the sulfur channel approximately 400 fold.

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1/2    019
                              UNCLASSIFIED              PROCESSING DATE--16OCT70
TITLE--ON THE RESPIRATORY REFLEX RESPONSES TO DEFLATION OF THE LUNGS -U-

AUTHOR--LOOGA, R.YU.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA, 1970, VOL 56,
   NR 3, PP 392-399
DATE PUBLISHED------70


SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LUNG, RESPIRATION, UNCONDITIONED REFLEX, RESPIRATORY
   PHYSIOLOGY



CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1982/1607                STEP NO--UR/0239/70/056/003/0392/0399

CIRC ACCESSION NO--AP0052802
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0052802     UNCLASSIFIED          PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.  THE DECREASE OF THE PRESSURE
SIMULTANEOUSLY IN BOTH LUNGS OF ANESTHETIZED DOGS CALLED FORTH A
REFLECTORY TACHYPNOE, WHILE THE DECREASE OF THE PRESSURE IN ONE LOBE OF
THE LUNG CAUSED A REFLECTORY BRADYPNOE.  THE FIRST REFLEX SEEMED TO
ORIGINATE FROM RECEPTORS IN THE PULMONARY VESSELS THAT ARE SENSITIVE TO
CHANGES IN THE FILLING UP, AND THE SECOND REFLEX, FROM DEFLATION
RECEPTORS IN THE PULMONARY PARENCHYMA STIMULATED BY THE DECREASED VOLUME
OF THE LUNG.  THE VAGUS WAS THE AFFERENT NERVE FOR BOTH REFLEXES.
FACILITY:  DEPT. OF PATHOLOGICAL PHYSIOLOGY, TARTU STATE UNIVERSITY,
TARTU.

UNCLASSIFIED

USSR

VENDIK, O. G., LOOS, G. D., TER-MARTIROSYAN, L. T.

UDC 621.319.491-416.029.64

"Planar Segnetoelectric Capacitors for Microwave Devices"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 10, 1972, pp 2241-2243

Abstract: Studies were made of the electric and thermal characteristics of segnetoelectric capacitors for superhigh frequency devices at temperatures corresponding to the paraelectric phase of the segnetoelectric. Planar capacitors of Ba (Ti, Zr)O$_3$, (Ba, Sr)TiO$_3$ and SrTiO$_3$ films obtained by the method of agglomeration on BeO were investigated. For thicknesses of the films of several microns the capacitors have high nonlinearity. A decrease in the initial capacitance of the capacitor with a decrease in the film thickness confirms the known laws of variation of $\varepsilon$ with thickness of the segnetoelectric layer [E. V. Bursian, et al, Fizika tverdogo tela, Vol 6, No 6, 1818, 1964; St. Clucksman, et al., Zesz. nauk. Wyzsza szkola ped. Katowicach, No 6, 7, 1968]. The nonlinearity of the films in the investigated thickness range of 3-40 microns varied little. MgO can be recommended as the substrate material. The capacitance and nonlinearity of planar capacitors with a substrate of MgO is lower than in the case of using BeO for the same film thicknesses. Satisfactory nonlinearity is not obtained on sapphire with film thicknesses less than 5 microns. The dielectric losses in the planar capacitors in the centimeter wave

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range were defined by the resonator method. To measure the thermal delay constant the investigated capacitor was included in a superhigh frequency circuit to which a weak measuring signal and powerful pulses were fed. The temperature dependence of the capacitance of a planar capacitor is characterized by a highly diffuse peak for film thicknesses less than 10 microns. Capacitors with a $SrTiO_3$ film applied by the agglomeration method on a BeO substrate made it possible for the first time to realize successful operation of a nondegenerate parametric amplifier in the 2 gigahertz range in the continuous mode.

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USSR

LIPATOVA, T. E., and LOOS, S. M.

"The Effect of the Structure of Reticular Polyurethans on Their Resolution in an Organism"

Translation:  The authors study the rate of destruction and resolution of a polymer in the organisms of rabbits using specimens obtained from various glycol components and various binders.  The polyurethans of various structure resolved in the organism at various rates.  The destruction, resolution of the polymer, was characterized by the value of the tangent of the angle of inclination to the axis of the abscissas of the straight line set up within the coordinates:  suture density-implantation time.  The highest value tga=0.188 corresponds to the LTM-F type polyurethan which was obtained on the basis of poly-tetramethyleneglycol.  It is shown that the chemical composition, nature of the glycol component and of the binder, along with the wettability of the polymer surface and other factors affect the rate of polymer resolution. 1/1

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Polymers and Polymerization

USSR

UDC 541.64:678.664

LIPATOVA, T. E., LOOS, S. M., and MOMBUZHAY, M. M., Institute of the Chemistry of High-Molecular Compounds, Academy of Sciences of the Ukrainian SSR

"Interaction of Polyester Urethanes With Physiologically Active Media"

Abstract:  Polyester urethane film nets with and without a filler were studied to determine the feasibility of using these materials in gastroenteritic implants.  The films were based on polydiethylene glycol adipinate, toluylene diisocyanate, hemamethylene diisocyanate or diphenylmethane diisocyanate.  The cross linking agent was trimethylolpropane, and the filler was ordinary sugar or starch in quantities of 20% by weight.  It was found that after subcutaneous implantation of polyester urethane, as well as after standing in gastric juice for three months, destruction of the material begins, the mechanism of destruction being the same in both instances:  dissociation of both the urethane group and the ester bonds.  Pepsin is absorbed by the surface of the implant, resulting in a loss of activity of the enzyme solution.  At the same time, it is shown that pepsin can be desorbed from the polyester urethane

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USSR

LIPATOVA, T. E., et al, Vysokomolekulyarnyye Soyedineniya, Vol 12, Series A,
No 9, Sep 70, pp 2,051-2,056

surface under certain conditions.  Specimens are more rapidly "dissolved" in
physiologically active media if sugar is introduced as a filler in the im-
plant.

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USSR

UDC: 669.721.042.62

ARUSOO, A. K., KARRO, Kh. Kh., LAUGIS, Yu. Ya., LOOTUS, Ya. K., LOYGOM, V. V.,
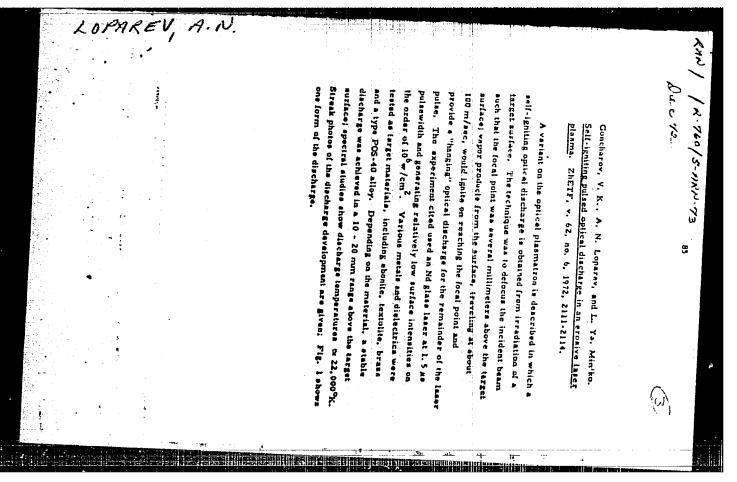SAKKOS, Kh. A., TIYSMUS, Kh. A.

"MHD Drives for Pumping of Liquid Magnesium"

MGD v Metallurgii i Liteyn. Proiz-ve [MHD in Metallurgy and Foundry Produc-
tion -- Collection of Works], Kiev, 1972, pp 126-130 (Translated from
Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G202, by G.
Svodtseva).

Translation:  The Tallin Polytechnical Institute has developed and introduced
to metallurgical production several induction MHD drives for feeding liquid
Mg from a continuous refining furnace to a casting conveyor.  The basic tech-
nical data are presented on the MHD drives and a schematic diagram of the power
portions is presented.  The drives operate under manual control.  During tapping,
the static head and hydraulic resistance are increased.  This means that conser-
vation of constant productivity requires that the supply voltage be increased by
1.2-1.8 times.  The channel of the pump is replaced every three to five days.
A diagram of the activity of the MHD drive under manual control is presented.

1/1

- 24 -

LOPAREV, A.N.

Goncharov, V. K., A. N. Loparev, and L. Ya. Min'ko.
Self-igniting pulsed optical discharge in an erosive laser plasma. ZhETF, v. 62, no. 6, 1972, 2111-2114.

A variant on the optical plasmatron is described in which a self-igniting optical discharge is obtained from irradiation of a target surface. The technique was to defocus the incident beam such that the focal point was several millimeters above the target surface; vapor products from the surface, traveling at about 100 m/sec, would ignite on reaching the focal point and provide a "hanging" optical discharge for the remainder of the laser pulse. The experiment cited used an Nd glass laser at 1.5 $\mu$s pulsewidth and generating relatively low surface intensities on the order of $10^6$ w/cm$^2$. Various metals and dielectrics were tested as target materials, including ebonite, textolite, brass and a type POS-40 alloy. Depending on the material, a stable discharge was achieved in a 10 - 20 mm range above the target surface; spectral studies show discharge temperatures $\approx$ 22,000°K. Streak photos of the discharge development are given; Fig. 1 shows one form of the discharge.

Acoustical and Ultrasonic

USSR

UDC 389.009.01(4:103):621.034

LOPASHEV, D. Z.

"Activity of the Permanent Committee on Standardization, Council of Mutual Economic Aid, in the Field of Acoustics"

Moscow, Izmerital'naya Tekhnika, No 7, 1972, pp 13-14

Abstract:  The activity of the Permanent Committee on Standardization, Council of Mutual Economic Aid, in the field of acoustics has been concerned primarily with the coordination of national standards of the member countries, pertaining to applied acoustics, with those of the USSR.  Metrological establishments of the member countries manifested particular interest in developing recommendations on standardization dealing with methods for the measurement of machine noise, standardization of noise-measurement equipment, and unification of acoustic standards, as well as with the correlation of acoustic terminology.

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USSR

UDC 621.375.82

GODLEVSKIY, A. P., LOPASOV, V. P., and MAKOGON, M. M.

"Ruby Laser With Frequency Scanning and Stabilization of Radiation Parameters for Laser Spectroscopy"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No 2(14), Moscow, "Sov. Radio," 1973, pp 68-71 (English summary) (from RZh-Fizika, No 10, Oct 73, Abstract No 10D831 from authors' abstract)

Translation: The article studies a ruby laser with stabilization of the radiation parameters. To achieve stabilization the cavity length was changed at a high speed (up to 6 m/sec) by means of a rotating glass plate placed in the cavity. A regular oscillating mode is obtained with the amplitude, repetition interval, spike length, and radiation divergence all stabilized. Control of the oscillation frequency was effected by means of a Lyot electro-optical filter. The range of oscillation frequency variation per pulse was $0.1-7$ cm$^{-1}$, depending on the amount of scanning voltage, the accuracy of the frequency setting no worse than $\pm 0.01$ cm$^{-1}$. It is suggested that a laser of this type be used to study the ultraweak absorption lines of a gaseous medium placed in the cavity. Bibliography with 13 titles.

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1/2    050
UNCLASSIFIED
TITLE--LASER RADIATION FREQUENCY CONTROL WITH THE AID OF BIREFRINGENT
   CRYSTALS -U-
PROCESSING DATE--30OCT70
AUTHOR-(02)-LOPASOV, V.P., MAKOGON, M.M.

COUNTRY OF INFO--USSR

SOURCE--OPTIKA I SPEKTROSKOPIIA, VOL. 18, MAR. 1970, P. 543-545

DATE PUBLISHED----MAR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RUBY LASER, LASER STABILITY, OPTIC CRYSTAL, FREQUENCY
   CHARACTERISTIC, NEODYMIUM LASER, LASER Q SWITCHING, CALCIUM MINERAL,
   LASER PUMPING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1565
STEP NO--UR/0051/70/028/000/0543/0545
CIRC ACCESSION NO--AP0118548
UNCLASSIFIED

CIRC ACCESSION NO--AP0118548    UNCLASSIFIED    PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A METHOD OF ELECTROOPTICAL FREQUENCY SCANNING OF RUBY LASER RADIATION. ACCORDING TO THE PROPOSED METHOD, FREQUENCY STABILIZATION IS ACHIEVED BY THE USE OF A BIREFRINGENT CALCITE PLATE AND A KDP ELECTROOPTICAL Q SWITCH. THE MAXIMUM PUMPING ENERGY IS FOUND TO EXCEED THE THRESHOLD ENERGY BY ONLY A FACTOR OF 1.3, AS AGAINST A FACTOR OF 5 TO 6 IN THE CASE OF A NEODYMIUM LASER.

UNCLASSIFIED

USSR

LOPATA, A. T.

UDC:  69;~327

"Effectiveness of Using Punched Tape and Preparing it for Feeding Economic Data Into the 'Minsk-22' Computer"

Mekhaniz. ucheta i vychisl. rabot. Mezhved. nauch. sb. (Mechanization of Accounting and Computing Jobs. Interdepartmental Scientific Collection), 1971, vyp. 12, pp 9-19 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekh-nika, No 10, Oct 71, Abstract No 10B426)

Translation: The paper deals with problems of selecting a computer medium for variable information. An analysis is given of the positive and negative factors of utilizing punched cards and punched tapes under conditions where computers are used for economic calculations. A specific example is given to illustrate the effectiveness of using punched tape as a computer medium for data input. The process of recording the information on punched tape is also briefly described. Ten tables. Resumé.

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USSR

SHUL'GIN, I. V., LOPATCHENKO, B. K., PIL'SHCHIKOV, B. V.

"Mathematical Modeling of Monocular Visual Perception"

Probl. Bioniki. Resp. Mezhved. Temat. Nauch.-Tekhn. Sb. [Problems of Bionics.
Republic Interdepartmental Thematic Scientific and Technical Collection],
1972, No 9, pp 40-44 (Translated from Referativnyy Zhurnal Kibernetika, No 4,
1973, Abstract No 4V726, by the authors).

Translation:  A mathematical description is presented of a system for con-
version of information encompassing a rather broad class of problems of
mathematical description of cerebral functions.  The introduction of the
mathematical concepts is studied as applicable to the problem of conversion
of the visual space into the field of vision of man with monocular perception.

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USSR

SHABANOV-KUSHNARENKO, YU. P., SHUL'GIN, I. V. and LOPATCHENKO, B. K.

"Introduction of Metrics in a Field of Vision"

Translation:  The regularities of conversion of a physical space into a subjective field of vision with monocular perception are mathematically described.  The introduction of a linear normalized space to the field by an axiomatic method allowed proof of the existence of mapping $\Phi$, converting the initial form of the field of vision to a normal form and providing Euclidean metrics within it.  Diagrams characterizing the form of transform $\Phi^{-1}$ are produced.
                                                        Author's view

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USSR

UDC: 8.74

SHABANOV-KUSHNARENKO, Yu. P., SHUL'GIN, I. V., PUTYATIN, Ye. P., LOPAT-CHENKO, B. K.

"Mathematical Modeling of Human Classification of Certain Classes of Visual Patterns"

V sb. Upr. i inform. protsessy v zhivoy prirode (Control and Information Processes in Animate Nature—collection of works), Moscow, "Nauka", 1971, pp 106-111 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V596)

Translation: The authors consider the following problem of interpretation of formulas which describe conversion of input signals to output signals in the organ of vision. Let there be a certain signal converter in the form of block 1. Signals $x_1$, $x_2$,... may be sent to the input of block 1. Signals $y_1$, $y_2$,... correspondingly appear at the output of block 1 in response to these signals. All possible signals $x_1$, $x_2$,... to which block 1 reacts form some set X. All possible responses of the converter form the set Y. The operator F puts the elements y of set Y into correspondence with the elements x of set X. This correspondence may be expressed by the

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USSR

SHABANOV-KUSHNARENKO, Yu. P. et al., Upr. i inform. protsessy v zhivoy prirode, Moscow, "Nauka", 1971, pp 106-111

formula $y = F(x)$. It is assumed that the operator is single-valued, but not mutually single-valued. Connected to the output of block 1 is block 2 which compares signals $y_1$ and $y_2$, reacting with a "yes" signal in the event they are equal, and with a "no" signal in the event of inequality. Blocks 1 and 2 are represented as a "black box." A pair of different input signals $x_1$ and $x_2$ can be sent to the input of the "black box", and by observing the reaction of the system as a whole, a judgment can be made as to whether or not the corresponding signals $y_1$ and $y_2$ at the output of block 1 coincide. It is required by experiments of this kind to determine the form of the operator F which gives a mathematical description of signal conversion in block 1. The formulated problem embraces a very extensive class of problems in mathematical description of various psychic functions of the brain. V. Mikheyev.

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USSR

UDC 576.8.095.18:615.779.90

PLAKUNOV, V. K., and LOPATIK, M. D.

"Biochemical Foundations of the Resistance of Microorganisms to Antibiotics"

Uspekhi Mikrobiologii, pp 211-225

Abstract: This review is devoted to special features of the metabolism of antibiotic-resistant microorganisms. A classification of resistance on genetic and biochemical principles is proposed. Consideration is given to instances of resistance caused by antibiotic inactivity, changes in the permeability of bacterial cells, and by changes in intracellular metabolic processes. A separate section is devoted to phenotype resistance.

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1/1

1/2    028
TITLE--TRICHOMONAD ULCERS OF THE PENIS -U- UNCLASSIFIED     PROCESSING DATE--18SEP70

AUTHOR--LOPATIN, A.I.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 3, PP 78-79

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SKIN DISEASE, PARASITIC DISEASE, REPRODUCTIVE SYSTEM, MAN,
LYMPHATIC SYSTEM, UROLOGY, EDEMA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1493

CIRC ACCESSION NO--AP0101577

STEP NO--UR/0206/70/000/003/0078/0079

UNCLASSIFIED

CIRC ACCESSION NO--AP0101577     UNCLASSIFIED          PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0-  ABSTRACT.  A PATIENT WITH 7 TRICHOMONAD ULCERS OF THE PENIS IS DESCRIBED.  THE ULCERS WERE ROUND IN SHAPE, THEIR SIZES VARIED FROM THAT OF A MILLET GRAIN TO THAT OF A LENTIL ONE, AND THEY WERE COVERED WITH AN EASILY REMOVED FILM OF YELLOWISH GRAY COLOR, THE EDGES OF THE ULCERS WERE STEEP, SOFT, CONGESTED.  AROUND THE ULCERS THERE WERE SOME EDEMA AND SKIN HYPEREMIA.  UPON PALPATION THE ULCERS WERE SLIGHTLY PAINFUL.  THE INGUINAL LYMPH NODES HAD A SIZE OF A CHERRY BONE, WERE DENSE, MOBILE, PAINLESS.  TORPID FORM OF TRICHOMONAD URETHRITIS WAS DIAGNOSED IN THE PATIENT AT THE SAME TIME.

UNCLASSIFIED

1/2    027

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--MANIFESTATION OF A DONOR ACCEPTOR INTERACTION IN P NITROPHENOLATE SPECTRA -U-

AUTHOR-(02)-LOPATIN, B.V., KUZNETSOVA, T.YE.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 713-15

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IR SPECTRUM, ORGANIC NITRO COMPOUND, BENZENE DERIVATIVE, PHENOL, ORGANOMERCURY COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0640

STEP NO--UR/0062/70/000/003/0713/0715

CIRC ACCESSION NO--AP0119552

UNCLASSIFIED

CIRC ACCESSION NO--AP0119552     UNCLASSIFIED          PROCESSING DATE--30OCT70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE IR SPECTRAL DATA WERE
TABULATED FOR P XC SUB6 H SUB4 NO SUB2 WHERE X EQUALS ME, CLHG, CLHGCH
SUB2, BRHGCH SUB2, IHGCH SUB2, ME SUB2 N, HO, MEO, OR LI, NA OR K, IN
SALTS OF RELATED NITROPHENOLS P-XOC SUB6 H SUB4 NH SOB2.   IN FORMATION
OF THE METAL SALTS THE BAND FROM THE NO SUB2 GROUP INCREASES ITS
INTENSITY GREATLY AND ITS FREQUENCY DECLINES THUS SUPPORTING THE
CONTENTION THAT ANOMALIES EXIST IN IR SPECTRA OF COMPDS. CONTG. AN O
BRIDGE THAT CAN AID IN CHARGE CHANGES AT THE NO SUB2 GROUP IN AROMATIC
COMPDS.        FACILITY:   INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW,
USSR.

UNCLASSIFIED

1/2     018
TITLE--ODORIFEROUS SUBSTANCES OF HYDROGENATED FATS -U-

UNCLASSIFIED                                    PROCESSING DATE--30OCT70

AUTHOR-(05)-LOPATIN, B.V., SHMIDT, A.A., ZATULOVSKAYA, K.F.,
     KONCHALOVSKAYA, M.YE., GROMOVICH, YU.I.

COUNTRY OF INFO--USSR

SOURCE--MASLO-ZHIR. PROM. 1970, 36(2), 13-18

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--IR SPECTRUM, UV SPECTRUM, CARBONYL COMPOUND, HYDROGENATION,
     VEGETABLE OIL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0537

STEP NO--UR/9085/70/036/002/0013/0018

CIRC ACCESSION NO--AP0119456

UNCLASSIFIED